

**agriculture** *season rainfall* *fields* *shrub* *humid* *average* *dry irrigation* *reptiles* *flow* *temperature-oscillation* *flow* *perennial* *forest* *savannah* *jungle* *mammals* *cattle* *snow* *taiga* *deciduous* *shortages* *gathering* *Equatorial* *coniferous* *farming* *mild* *deforestation* *web* *grassland* *mining* *dam* *cool* *carpenter* *dam* *plantation* *grassland* *rainfall* *fields* *season*

## 2

# Elements of climate (I). Temperature and precipitation

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## 2.1 The elements of climate

The elements of climate are components of the atmosphere that can be measured. The main ones are temperature, precipitation, atmospheric pressure and wind.

All of them are modified by factors such as latitude, altitude and distance from the sea. These are invariable features that have got a permanent influence on the climate.

## 2.2 Temperature and its factors

Temperature is the amount of heat in the air. It is measured with a **thermometer** and expressed as **degrees Celsius** ( $^{\circ}\text{C}$ ). The **factors** that influence temperature are:

- **Latitude.** The temperature falls as you move from the Equator towards the poles. This is due to the curved surface of the Earth and the increasingly oblique angle of the solar rays that strike it.
- **Altitude.** The temperature drops by around  $0.6\ ^{\circ}\text{C}$  for every 100 metres above sea level you go. This is because the air is less dense, so it conserves less heat.
- **Distance from the sea.** The temperature is milder on the coast, while there are greater contrasts inland. This is because the sea warms and cools more slowly than the continental land mass.

On Earth, the temperature differences enable various **latitudinal thermal zones** to be distinguished: one that is torrid, two that are temperate and two that are frigid.

## 2.3 Precipitation and its factors

Precipitation is the water that falls on the Earth's surface from the clouds. It falls either in liquid (rain) or solid (snow and hail) forms. It is measured with a **rain gauge** or **pluviometer** and it is calculated in **millimetres** (mm) or in litres per square metre ( $\text{l}/\text{m}^2$ ).

The **factors** that influence precipitation are the following:

- **Latitude.** Precipitation levels are highest at the equator and they decline in the tropical, temperate and polar zones. This is because heat causes the air to rise and water vapour to ascend.
- **Altitude and terrain.** Precipitation levels rise in relation to increases in altitude. This is because cold temperatures favour air condensation. Furthermore, when the air encounters mountainous terrain, it is pushed up to higher altitudes and cools as a result.
- **Distance from the sea.** Precipitation levels are higher on the coast because the sea is a constant source of humidity.

On Earth, annual precipitation levels vary in different regions. These differences enable zones to be distinguished depending on whether precipitation is **very high, high, moderate, scarce** and **very scarce**.

## Skills progress

### Organising information

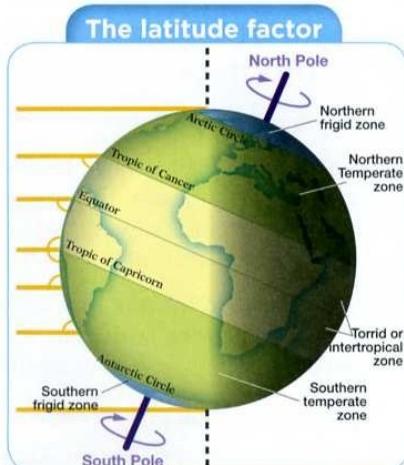
- 1 Create a table to compare the characteristics of temperature and precipitation with these sections: *definition, instrument it is measured with, measurement unit, factors and distribution on Earth*.

### Analysing physical phenomena

- 2 Is rain the same as precipitation? Explain.
- 3 What factors influence the different temperatures and precipitation levels?
- 4 Where are you most likely to find higher levels of precipitation - at the base of a mountain, or on its peak?

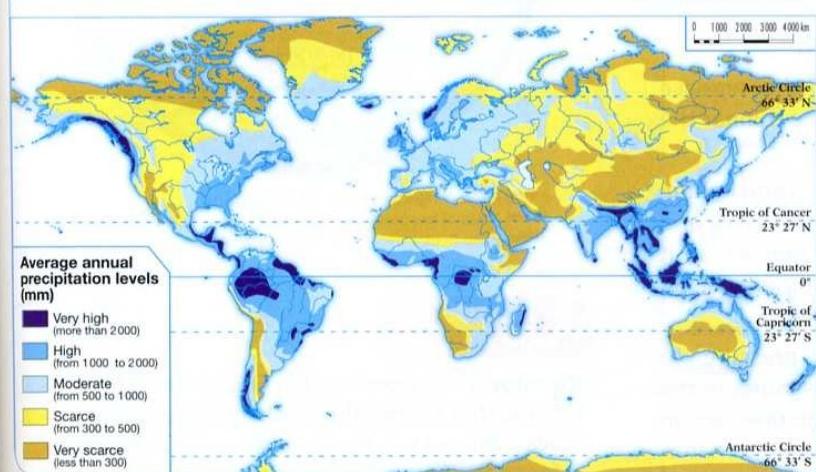
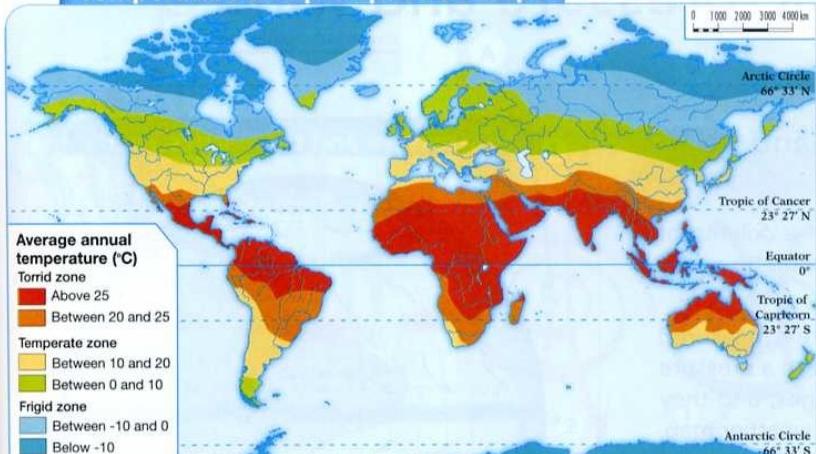
### FOCUS on English

A **pluviometer** provides data in millimetres. **Metre** is the basic unit of the metric system in British English (meter is American English).



The Sun's rays strike the tropical zones perpendicular or nearly perpendicular so the temperatures are always higher. The heat is distributed across a smaller area and generates greater heat. Heat also favours precipitation.

### Temperature and precipitation maps



**Temperature (A)** is represented on maps with **isotherms** or lines that connect locations with the same temperature.

On Earth, temperature levels fall with increases of latitude and altitude and they are also milder near the coast.

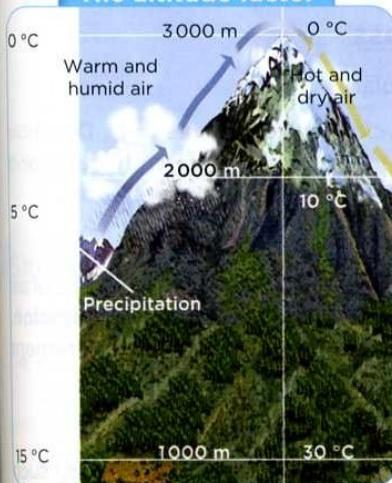
### FOCUS on English

**Isotherm** and **isohyet** are words used to name the lines that connect points with the same temperature or precipitation. Both begin with the Greek prefix *iso-*, which means the same. Other words beginning with this prefix include **isometric** and **isobars**.

**Precipitation (B)** is represented on maps with **isohyets** or lines that connect locations with the same precipitation levels.

On Earth, precipitation levels are higher at the equator on high ground and along the coast.

### The altitude factor



### Distance from the sea

In winter, the warmer sea air moves towards the coast. In contrast, during the summer, the warmer coastal air moves towards the sea. In addition, precipitation levels are usually higher because the sea is a constant source of humidity.

#### Winter

Warm air

The sea is warmer than the land

#### Summer

Cool air

The sea is cooler than the land

The temperature drops by around 0.6 °C for every 100 metres above sea level you go. Meanwhile, precipitation levels rise because, as the air rises, it cools and condenses.

### Skills progress

#### Working with maps

- 5 Use the atlas to locate a country that is included, fully or partially, in each thermal zone and in each precipitation zone.

#### Working with pictures

- 6 How are solar rays received in the Earth's torrid, temperate and frigid zones?

How does this influence the planet's temperature levels?

- 7 If the temperature at an altitude of 0 metres is 3 °C, what would it be at the peak of a mountain that is 2500 metres high?

# 3

# Elements of climate (II). Atmospheric pressure and wind

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## 3.1 Atmospheric pressure and its factors

Atmospheric pressure is the weight of a column of air on a place. It is measured with a **barometer** and is expressed as **millibars** (mb).

The **average pressure** or normal pressure is measured at sea level. It is 1013.5 mb. The areas with a pressure higher than the average are **anticyclones**, and they are represented using a letter A on the weather map. Areas of lower pressure are **depressions**, and they are represented with a letter B.

These differences in pressure are due to:

- **Altitude.** Pressure falls in relation to the increase in altitude. The higher one ascends, the thinner the layer of air over a location becomes.
- **Air temperature.** Warm air is less dense and lighter, so it tends to rise. This produces low pressure and precipitation. Cold air is denser and heavier, so it tends to fall. This produces high pressure, or an anticyclone, that causes stable weather.

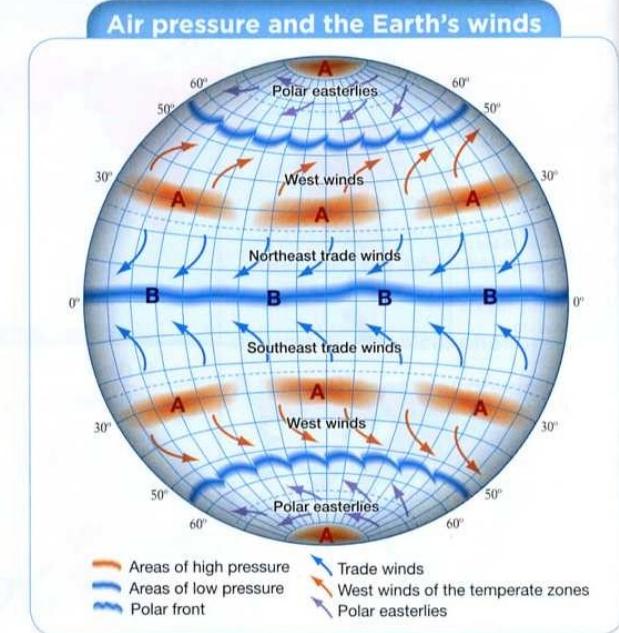
The Earth has areas of high and low pressure. At the **equator**, there is permanent low pressure; in the **tropics** and at the **poles**, permanent high pressure; in the **temperate zones**, high and low pressure alternates.

## 3.1 Wind and its factors

Wind is the horizontal movement of air. Its speed is measured with the **anemometer**, either in kilometres per hour (km/h) or in metres per second (m/s). Its direction is measured with a **weather vane**. This is based on the cardinal point of the source of the wind: east wind, west wind, etc.

The **factor** that causes the wind is the difference in atmospheric pressure. The wind always blows from areas of high pressure towards areas of low pressure. Its speed is higher the greater the difference in air pressure between the area it is blowing from and the area it is moving towards.

On Earth, there are **constant winds** that transport hot air towards the cold zones and vice versa, maintaining an equilibrium of temperatures. The most important winds are the **trade winds**, the **west winds** and the **polar winds**. There are also **seasonal winds**, such as the **monsoons** in South East Asia; and **daily winds**, such as marine and mountain **breezes**.



### FOCUS on English

**Equator** is the word used in English to refer to the line that divides the Earth into two similar halves. But we use the Spanish word, **Ecuador**, to refer to the South American country that receives its name from that line. Do not confuse the two.

### Skills progress

#### Building vocabulary

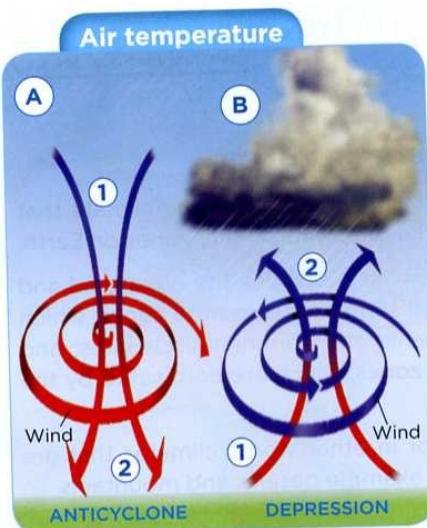
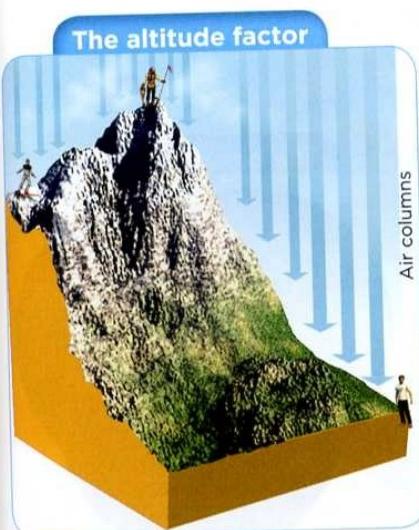
- 1 Define *anticyclone* and *depression*. Describe the air temperature associated with each and indicate whether there is any precipitation.

#### Organising information

- 2 Create a table comparing the characteristics of air pressure and wind with these sections: definition, instrument it is measured with, measurement unit, factors, distribution on Earth.

#### Setting yourself objectives

- 3 On Earth, there are also seasonal winds, such as monsoons; and daily winds, such as marine breezes. Set yourself a goal to learn more about this topic and make sure you achieve it.

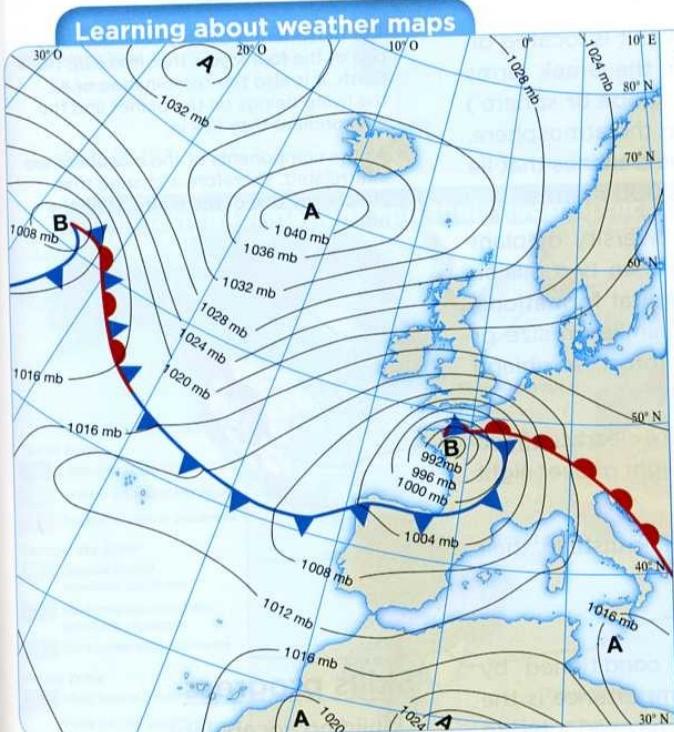


Atmospheric pressure decreases with **altitude**. The higher the altitude, the smaller the volume and weight of the column of air over a location becomes.

**Air temperature** also influences the differences in atmospheric pressure.

A. Cold air (1) is heavy and tends to fall. Then it is warmed (2) and produces dry weather.

B. Warm air (1) is light and tends to rise. Then it cools (2) and produces precipitation.



Surface analysis  
Day 22-II-2000

**A** Anticyclone

**B** Depression

1032 mb Millibars

— Isobars

▲▲▲ Cold front

—●— Warm front

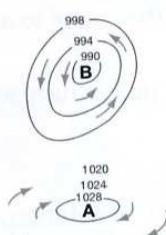
▲▲● Occluded front  
(is the meeting of cold and warm fronts, which gives rise to a depression that diminishes and disappears)

Atmospheric pressure is represented in maps with isobars. For example, this is the case with **weather maps**, which represent the locations of anticyclones, depressions and weather fronts.

- In **anticyclones (A)**, the wind moves between the isobars from left to right in the northern hemisphere; and from right to left in the southern hemisphere.

- In **depressions (B)**, the wind moves from right to left in the northern hemisphere; and from left to right in the southern hemisphere.

- **Fronts** are the areas of contact between two air masses with different characteristics. They are represented with a red line with semicircles (hot front) or a blue line with triangles (cold front). Both cause precipitation as they pass over.



## Skills progress

### Interpreting cartographic languages

4 Answer the following using the weather map:

- What does the number that accompanies the isobars indicate?
- How do you identify anticyclones and depressions?
- In what direction does the wind turn in an anticyclone?

- In what direction does the wind turn in a depression?
- What is the value of the isobar closest to the main anticyclone over the Atlantic?
- What fronts appear? What kind of weather do they cause?
- What will the weather be like in Iceland and on the west coast of France? Why?

# 4

# Climates, vegetation and bioclimates

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## 4.1 The climate and climatic zones

The combination of elements and factors affecting the climate that we have just studied give rise to the different climatic zones on Earth.

These zones are the **torrid zone**, which includes the equatorial and tropical climates; the northern and southern **temperate zones**, which includes the Mediterranean, oceanic and continental climates; and the northern and southern **frigid zones**, which are dominated by the polar climates.

There are also **azonal climates**, or in other words climates that are found in a number of regions, for example deserts and mountains.

## 4.2 Vegetation and the biosphere

**Vegetation** is the entire range of plant life in an area. It is located on the Earth's surface in the **biosphere**, (formed from the Greek terms *bios*, which means 'life'; and *sphera*, which means 'globe or sphere') which is inhabited by living beings. It extends from the atmosphere, which has an altitude of 50 km, down to the oceanic trenches that lie at the bottom of the ocean with depths of up to 88 000 metres.

The biosphere is characterised by an enormous diversity of plant and animal species (biodiversity). There are more than two million species. Plants are grouped according to their **vegetal formations**, or the combination of plants in a region that are similar in size or characteristics. The main types of vegetation are forest, scrubland and grassland.

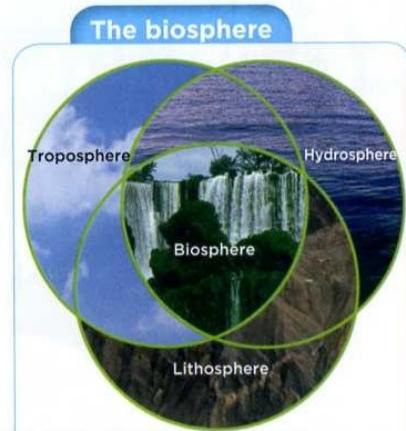
- **Forest areas** are formed by trees: plants which have a clearly defined trunk that divides into branches. They grow to a height of over eight metres.
- **Scrublands** consist of plants that do not have a trunk. Instead, their branches divide at ground level.
- **Grasslands** consist of grasses.

On Earth, the distribution of the vegetation is conditioned by numerous factors. Among these and of particular importance is the relief, the soil, and above all the climate, since plants have adapted to the specific humidity, light, temperature and wind conditions of every zone on Earth.

## 4.3 The Earth's bioclimates

The close relationship between the climate and vegetation gives rise to the formation of extensive regions referred to as bioclimatic environments or bioclimates. Each bioclimate is characterised by its own climatic features and vegetation.

The distribution of bioclimates across the Earth usually coincides with climatic zones which enable us to identify three major bioclimates: the torrid, temperate and frigid zones.



The **biosphere** is usually considered as one of the four layers that make up the Earth. It is also the combination of all the living beings on the planet and the environment they live in.

All the components of the biosphere are interrelated. Therefore a change that affects any one of them affects all the others.

## Skills progress

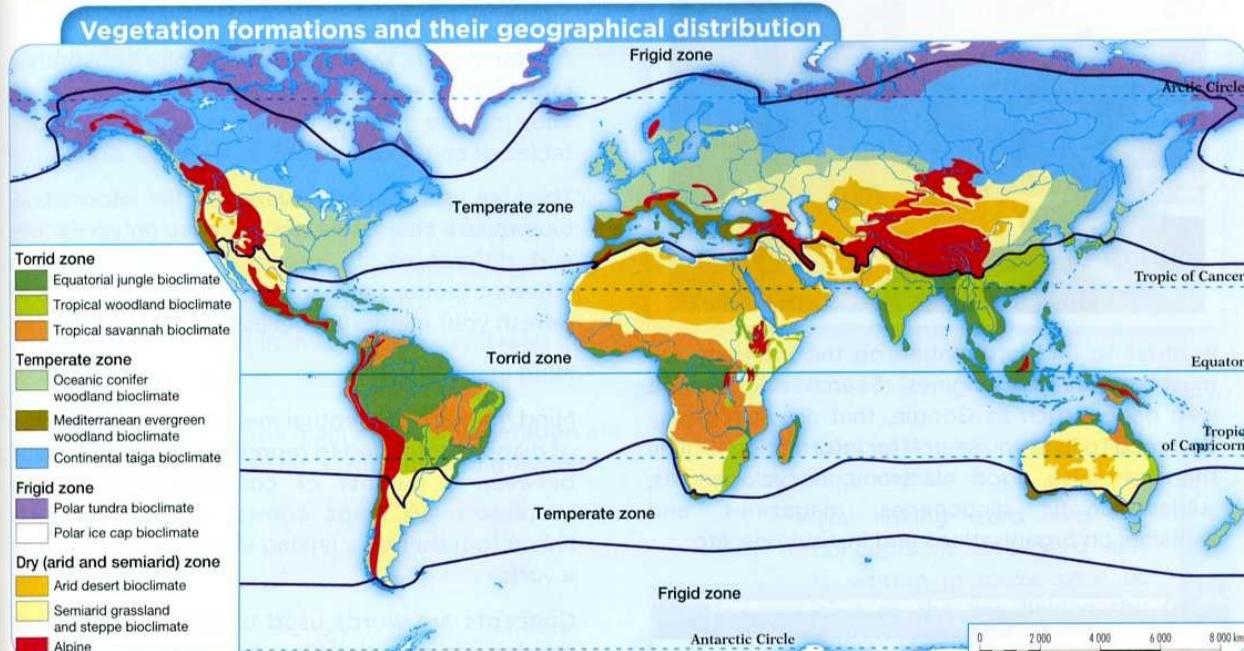
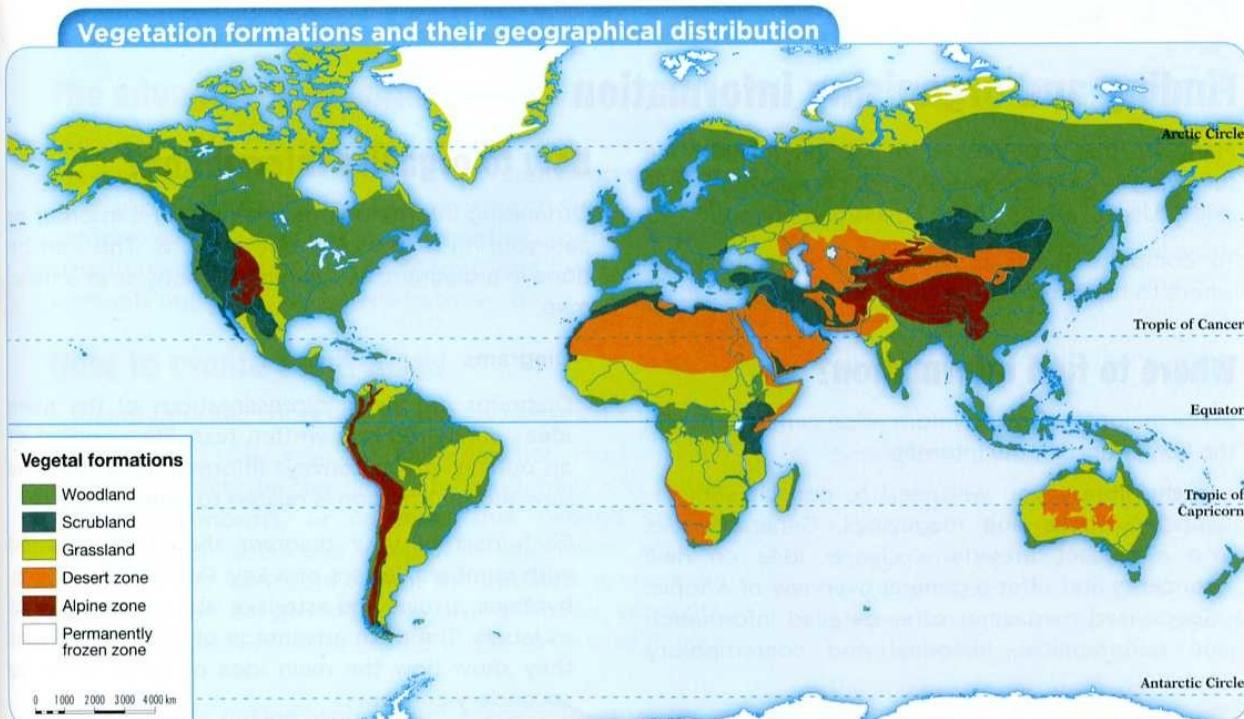
### Building vocabulary

1 Define the following terms: *climate zones*, *vegetation*, *biosphere* and *bioclimate*.

### Analysing physical phenomena

2 Why do you think there is a relationship between climate and vegetation?

3 Give an example of factors that condition the distribution of vegetation on Earth.



## Skills progress

### Working with maps

- 4 Using an atlas name two countries in which forests predominate, two in which scrubland predominates and two where grassland predominates.

- 5 Consult the climate zone map and complete the following tasks: a) Give an approximate indication of the latitude for each climatic zone; b) Locate the following bioclimates in their corresponding zone: *desert, oceanic, tropical, continental, polar*.



## Geographical graphs. The climograph

### Graphs used in geography

A graph is an ordered representation of one or more variables. Their essential function is to facilitate the comprehension of the data represented, or to illustrate relationships between data.

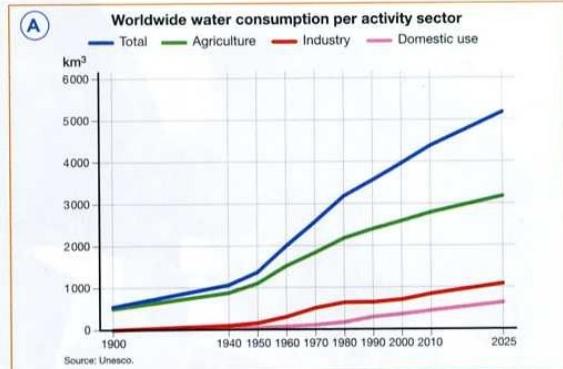
The commonly used graphs in geography are line graphs (A), bar charts (B) and pie charts (C), as they allow statistical data to be represented, compared and interpreted.

### Steps to follow to create a graph

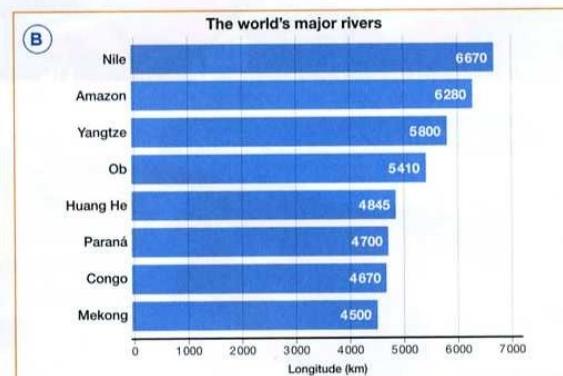
- Find the information you want to represent.
- Create the graph by following this method:
  - For a **line graph or bar chart**. Draw two axes and along the first axis add the relevant quantities and along the second axis the time (years, centuries) or other variables (continents, countries, etc.). Then the values are represented using lines or horizontal or vertical bars.
  - For a **pie chart**. The final data is converted into degrees (no. of cases  $\times$  360°: total no.), and these are then represented as segments.
- Add a **key**, include a **title** and cite the **source** from where you have obtained the data.

### Steps to follow when writing a commentary

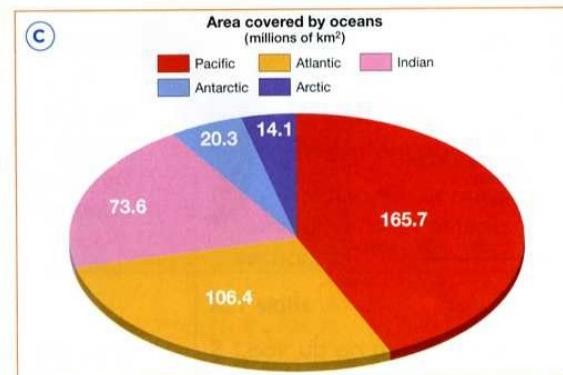
- Identify the graph.** This involves producing a broad description of it, concentrating on the title, key and data. We can use it to:
  - Identify the type of graph: line graph, bar chart, pie chart.
  - Specify the information it provides: subject represented, geographical space referred to, form of data and source.
- Writing a commentary on graphs.** To do this you need to define the geographical phenomena represented, describe its evolution over time or its distribution in space and give an explanation for it on the basis of what is known about the topic.



Line graphs use lines to represent the evolution of data over the course of time: days, months or years. They can be simple or multiple depending on whether they represent the evolution of one or more variables.



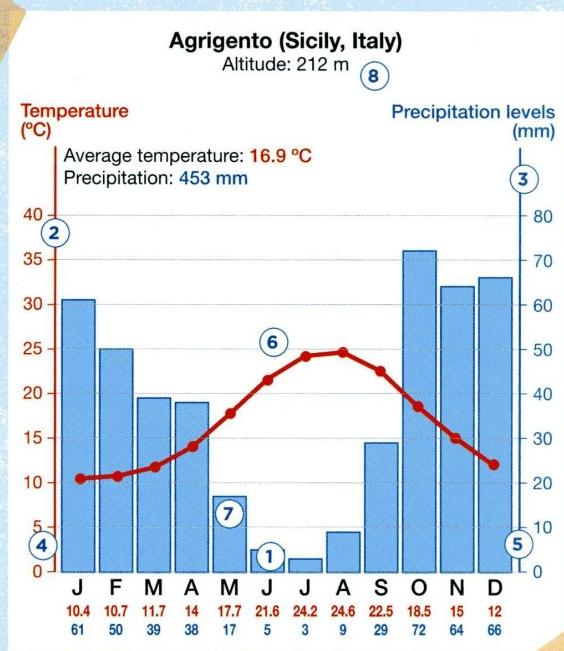
Bar charts use bars to represent statistical data that varies widely from year to year, or to compare data. The bars can be horizontal or vertical, and their height or length is proportional to the importance of the phenomena represented.



Pie charts use a circle, semi-circle or other geometric figure to represent the characteristics of a set of data or the proportions between different elements with regard to the total.

## The climograph is an essential graph

The climograph is a double graph —line graph and bar chart—, which represents the average monthly temperatures and precipitation levels for a place throughout the year.



## Creating a climograph. Steps to follow

- Draw the **horizontal axis**, divide it into 12 equal sections and label each with one of the months of the year (1).
- On the left and right hand side add **two vertical axes** (2 and 3). On one of them mark it with the range of temperatures in °C (4); and the other with the range of precipitation levels in mm (5). The precipitation levels axis should be twice the height of the temperatures axis.
- Use the left hand scale to mark with points the **average monthly temperatures**. Then, link the dots with a line (6).
- Use the right hand scale to represent the **monthly precipitation levels** (7) with vertical bars.
- Write a **heading**: name of location, altitude, average annual temperature and total annual precipitation (8).

## Commentary. Steps to follow

- Temperatures.** Indicate what the average annual temperature is and its variations throughout the year. Also calculate the atmospheric temperature, or the difference between the warmest and coldest months.
- Precipitation levels.** Indicate the total precipitation level and its distribution over the year. Highlight whether the precipitations are regular or not. In the latter case state in which seasons they are higher or lower.
- Climate.** Identify the type of climate, the approximate location and the specific characteristics of the natural environment.
- Practical indications.**  
The arid months are those in which the precipitation bars on the climograph are located beneath the temperature curve.

## Let's write a commentary on the climate of Agrigento

- The average annual temperature is moderate, but there are clear differences between the relatively short winter and the long hot summer. The annual atmospheric temperature is high ( $24.6 - 10.4 = 14.2^{\circ}\text{C}$ ).
- The total annual precipitation levels are moderate (453 mm) and their distribution is irregular. They are at their lowest in the summer (3 mm in July). There are five dry months.
- These characteristics are typical of the Mediterranean climate and are associated with evergreen woodland, of which the most characteristic tree is the holm oak.



### Put into practice

- Create a climograph and write a commentary on it using the following data:  
Altitude: 66 m. Average temperature: 14 °C.  
Total precipitation: 1198 mm.

MONTHLY AVERAGES	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT.	OCT	NOV	DEC
Temperature (°C)	9	9	12	12	14	17	19	19	18	15	12	10
Precipitation (mm)	119	89	84	82	88	66	59	84	114	134	134	155

- Invent a system to obtain temperature and rainfall data for your municipality.



## Commenting on images. The geographical landscape

### Types of image

Geography books use different types of images, such as photographs, drawings and sketches. They are all valuable sources of geographical information, since they provide data about geographical reality.

In the following pages, we will focus on writing commentaries on **photographs of geographical landscapes**, or the combination of visible elements in a geographical space.

By using these images, we are able to learn about Spain's different types of landscape, identify their similarities and differences and group and classify them. Furthermore, by analysing and interpreting them, we can gain an understanding of natural spaces and the ways human beings establish relationships with their environment.

### Types of landscape

The two most common landscapes are: natural landscapes (**A**) and humanised landscapes (**B**).



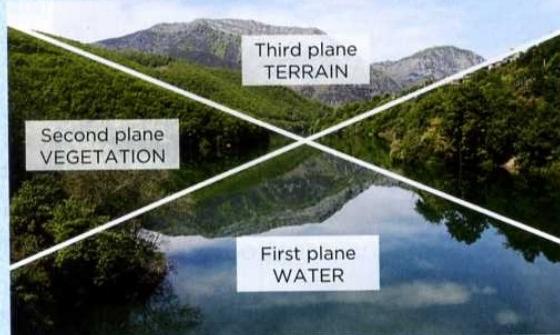
- **Natural landscapes** are the result of a combination of natural elements in space, or in other words, without any human intervention. Today, truly natural spaces are scarce.

- **Humanised landscapes** result from the transformation of the natural environment by human intervention. This is how agrarian landscapes, industrial landscapes, service-sector landscapes and urban landscapes occur.

### Steps for commentaries on landscapes

- **General Observation.** This consists of clearly identifying the elements shown in the photograph. On the basis of this observation, we can identify whether we are dealing with a natural or a humanised landscape.

- **Producing a sketch.** The sketch should offer a breakdown of the different elements of the landscape. Here is an example of a sketch:



- **Description.** This consists of listing and describing the characteristics of each element of the landscape: terrain, natural vegetation, crops, dwellings, etc.

- **Concluding commentary.** We need to draw conclusions on the relationship between the landscape's features; indicate the geographical location; and give an explanation for the landscape on the basis of our knowledge of the subject.

If it is a natural landscape, we will need to make deductions about the natural environment and explain its characteristics. If it is a humanised landscape, we will need to comment on the human activities and assess their impact.

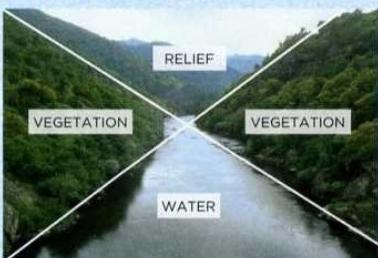
## Let's comment on a geographical landscape

### • General observation



The image depicts a section of the River Sil. Therefore, it is a natural landscape.

### • Producing a sketch



Study the three planes. These correspond to the background terrain; the flow of the river itself, which is in the centre and filled with water; and the vegetation, which is present in the whole image, but can be clearly seen in the left and right hand sections of the image.

### • Description

No human activity is depicted in the image and the various elements of the physical environment (terrain, water and vegetation) fill all the visible space. The terrain is mountainous and the natural vegetation has a luxuriant foliage. The river has an abundant flow of water.

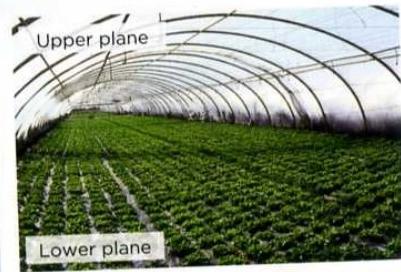
### • Concluding commentary

The river Sil is the main tributary of the river Miño. It flows through the provinces of León, Ourense and Lugo. The photograph shows a landscape from the oceanic bioclimate that covers the northwest and north of the peninsula. This environment is characterised by its mountainous terrain with steep slopes and a mild climate with abundant precipitation. As a result, the rivers have a regular water level and are fast flowing due to the mountains being located close to the sea. The typical vegetation is deciduous woodland with oak and beech trees; when this vegetation suffers the effects of human impact a type of high and dense scrubland called *landa* occurs, which has species such as heather and gorse.



### Practical advice

- To produce a sketch you should:
1. Distinguish the spatial units or planes of the landscape.
  2. Identify the elements in each space or plane.
  3. Use lines to demarcate the landscape's planes.



### Put into practice

- 1 Write a commentary on the landscape in photograph A on the previous page.
- 2 Choose one of the images from the unit and write a commentary following the steps explained in this section.
- 3 Find two images on the Internet that are representative of Spanish landscape types. Then write a commentary on them.
- 4 In groups, organise a landscape photography competition. Begin by deciding on the competition guidelines. For example: participants, photo guidelines, time scale, judges and prizes. Exhibit the winning photographs in your school.

# 1

# The major bioclimatic zones: the torrid zone

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## 1.1 General characteristics

The **torrid zone** is roughly located between the tropics of Cancer and Capricorn. Its most significant feature is its high average temperature, which is always above 18 °C.

There are three types of torrid climate: **equatorial, tropical** and **desert**. They each have different precipitation levels. The torrid desert bioclimate is azonal and is found in various regions around the world. We will therefore study it separately.

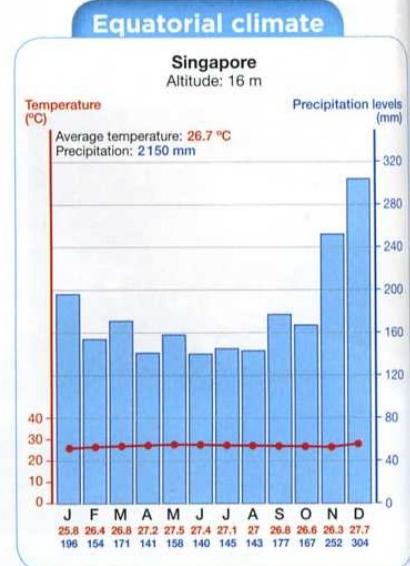
## 1.2 The equatorial bioclimate

The equatorial **bioclimate** covers the narrow strip to the north and south of the equator.

**Temperatures** there are constantly high, at around 25 °C all year round. The atmospheric temperature range (the difference in temperature between the hottest and coldest months) is approximately 3 °C.

Annual **precipitation levels** exceed 1500 mm and the amount of precipitation is distributed regularly over the year. Therefore, there is just one hot and humid season. As a result, equatorial rivers are regular and have a high volume of water.

**Vegetation** in the equatorial climate is characterised by **rainforest**, also known as **jungle**. It consists of dense woodland, which remains green all year round. It consists of many different vegetation species, which are distributed at different heights and therefore compete for light and space.



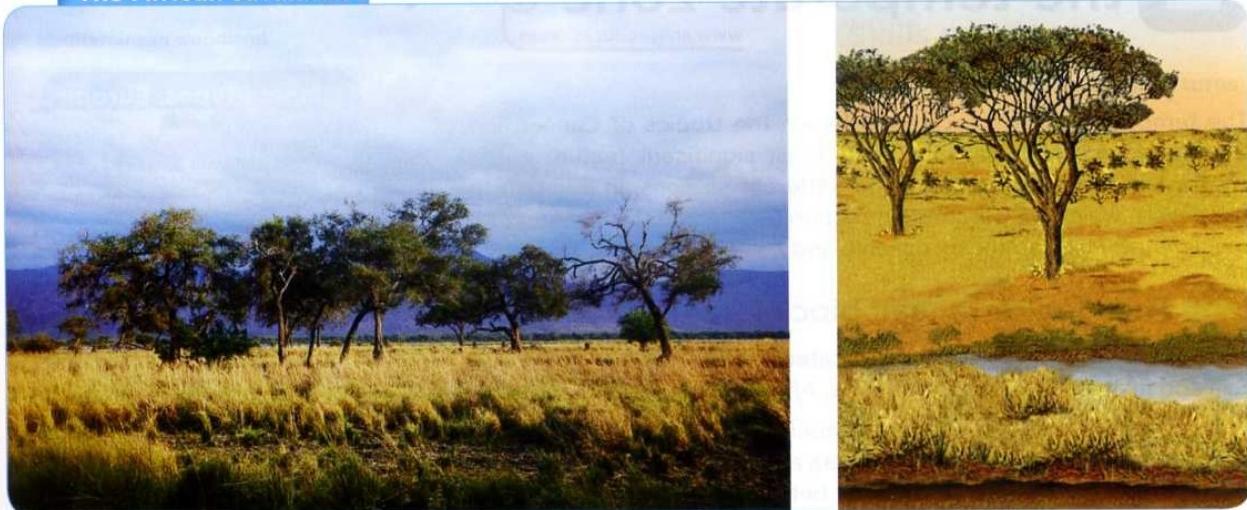
## Skills progress

### Understanding space

- Using an atlas, name one country with an equatorial climate and one country with a tropical climate in America, Asia and Africa.



### The African savannah



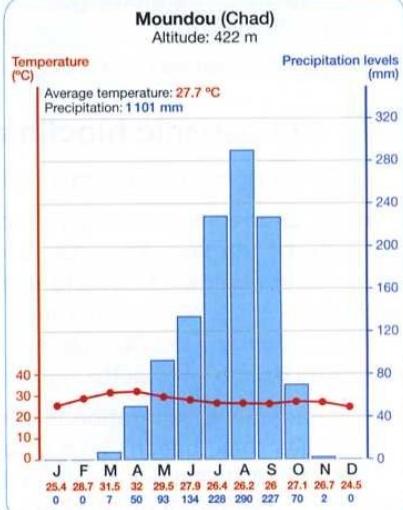
### 1.3 The tropical bioclimate

The tropical **bioclimate** extends from the equatorial zone to the edges of the two tropics. **Temperatures** do not fall below 18 °C and the atmospheric temperature range varies between 3 °C and 10 °C. **Precipitation levels** are high, ranging from 750 to 1500 mm a year. Nevertheless, the amount of rainfall is irregular: there is a summer rainy season and a winter dry season.

This bioclimate is divided into two **subtypes**: the **humid tropical** zone, in which the dry season lasts three months or less; and the **dry tropical** zone or **savannah**, where it lasts more than three months. As a result, the water levels in **rivers** vary greatly across the seasons.

Dominant **vegetation** depends on precipitation levels. In the more humid zones, there is **tropical woodland**, which is less dense and taller than equatorial woodland. **Savannah** is found in areas with a prolonged dry season. It consists of tall grasses, which are mainly graminaceous species that grow during the wet season and die during the dry season. Scrub plants and trees with a horizontally spreading crown, such as the acacia and baobab, also grow there.

### Dry tropical climate



### Skills progress

#### Linking information

- 2 Which climates have: a) only one single season?; b) two seasons: rainy and dry?

#### Developing individual projects

- 3 Imagine that you have to organise a study trip to learn about the equatorial bioclimate. Answer: a) Which country would you choose? Which continent is it on? b) What kind of clothes would you take? Give reasons for your answer.

- c) What kind of vegetation will you be able to photograph?

#### Finding solutions

- 4 Compare the climate and vegetation of the equatorial and tropical zones. Create a summary table or a mind map, and justify your answer.

#### Learning about geographical landscapes

- 5 Describe the features of landscapes in the torrid zone shown in the pictures.

# 2

# The major bioclimatic zones: the temperate zone

[www.anayaeducacion.es](http://www.anayaeducacion.es)

The temperate zone is located between the tropics of Cancer and Capricorn and the polar circles. Its most significant feature is the contrast in temperature across the different seasons. In addition to the desert, which we will study in section 3, there are three temperate bioclimates: Mediterranean, oceanic and continental.

## 2.1 The Mediterranean bioclimate

The Mediterranean bioclimate is located around the Mediterranean Sea and in areas of Western America, Africa and Australia.

There is little contrast in climatic temperature, since it is close to the sea. The winters are mild and summers are warm or hot (over 22 °C). Precipitation levels are moderate, at between 300 and 800 mm per year. They are also irregular and there is a summer dry season. The rivers have a low volume and low water level in the summer.

The characteristic vegetation is Mediterranean woodland. This consists of small, perennial trees with coarse bark and small leaves. Examples include holm oak, cork and pine. There are also numerous shrubs, such as kermes oak, rock rose, thyme, rosemary, etc.

## 2.2 The oceanic bioclimate

It is located along the western border of the continents.

Climatic temperatures are fairly constant and moderate, given the influence of the sea. As a result, winters are not particularly cold (never falling below -3 °C) and summers are cool (not going above an average of 22 °C). Precipitation levels are high, at over 800 mm per year. They are also regular and there is no dry season or month. The rivers have a constantly high volume of water.

The characteristic vegetation is deciduous woodland. It is made up of tall trees (oak, beech) with straight trunks and large leaves that fall in autumn. In colder areas, or areas where woodland has been destroyed, vegetation consists of scrubland and grass meadows.

## 2.3 The continental bioclimate

The continental bioclimate is located in inland continental regions.

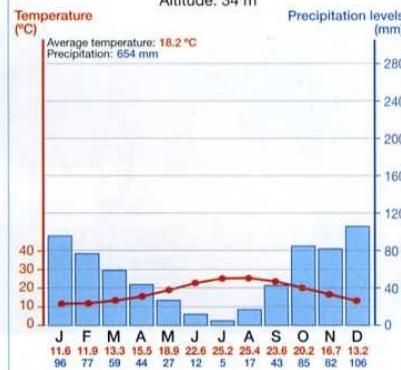
There is a contrast in the climatic temperatures owing to the distance from the sea. Winters are very cold (temperatures can fall below -3 °C), and summers are warm or hot. Precipitation levels are moderate (300-800 mm) and tend to fall in summer and appear as snow in the winter. The rivers freeze in winter and their levels rise in spring, when the water melts. They have a high volume of water in summer.

Vegetation varies according to latitude and precipitation levels. From north to south, this bioclimate includes taiga, or coniferous woodland with trees that have needle-shaped leaves (pine and fir trees), along with grassland, consisting of high grasses. This kind of vegetation diminishes when precipitation levels fall, creating steppes.

### Climate types. Europe

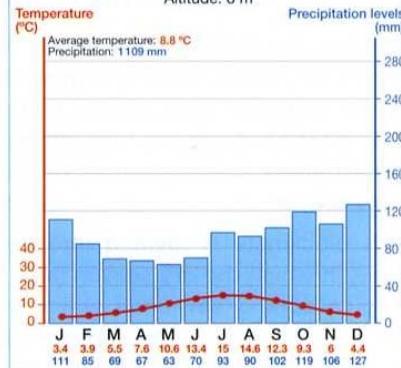
#### Mediterranean

Palermo (Italy)  
Altitude: 34 m



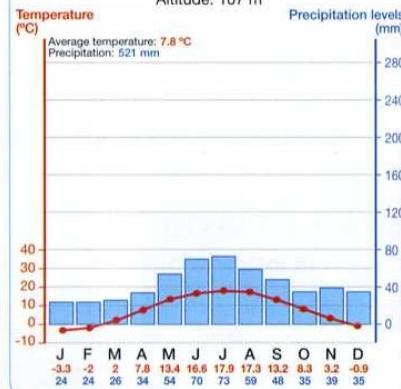
#### Oceanic

Glasgow (United Kingdom)  
Altitude: 8 m



#### Continental

Warsaw (Poland)  
Altitude: 107 m



### Skills progress

#### Interpreting graphs

1 Comment on the climographs.

## Temperate zone landscapes. Europe

### Mediterranean woodland



Holm oak

### Deciduous woodland



Beech

### Taiga



Red fir

### Skills progress

#### Working with texts and pictures

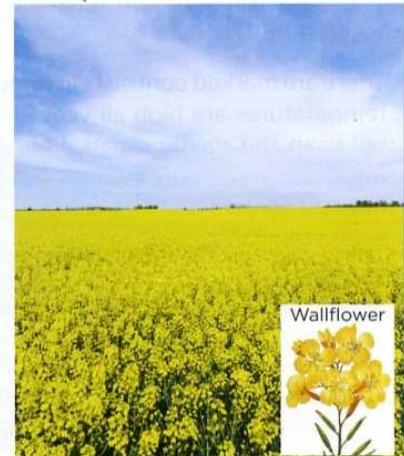
- 2** Use the pictures to compare different vegetation landscapes in the temperate zone.

You should refer to at least the following aspects: location, characteristics and representative vegetation species.

#### Understanding space

- 3** Use an atlas to list a number of countries in the Mediterranean, oceanic and continental climates.

### Grasslands



Wallflower

### Skills progress

#### Understanding space

- 4** Using an atlas, list some European countries that are located in the oceanic, Mediterranean and continental climatic zones.

#### Analysing physical phenomena

- 5** What is the difference between the temperate climate in a place such as Glasgow and the climates found in the torrid zone?

#### Organising information

- 6** Complete a summary table on the temperate bioclimate in your notebook.

It should include the following entries:

- Location.
- Climate: temperature and precipitation.
- Rivers.
- Vegetation.

#### Choosing with your own criteria

- 7** Choose a tree that belongs to each of the temperate climates and find images of it on the Internet. Then write a caption for the photographs, listing the most characteristic features of each one.

# 3

# Desert bioclimates

[www.anayaeducacion.es](http://www.anayaeducacion.es)

## 3.1 Torrid and temperate deserts

The desert bioclimate extends across torrid and temperate zones and covers around 30% of the Earth's landmass.

- In the **torrid zone**, it is located near the tropics of Cancer and Capricorn. The dry conditions found there result from permanent high pressure. One example is the Sahara.
- In the **temperate zone**, desert conditions are found in the inland areas of the continents. This type of desert is arid, owing to continental conditions such as an excessive distance from the sea (the Gobi Desert) and mountainous terrain, which prevents the movement of oceanic humidity (the Patagonian Desert).

## 3.2 Arid desert climates

All desert climates are characterised by **aridity** and irregular precipitation.

- There are marked contrasts in **temperature**. In torrid tropical deserts, temperatures are high all year long and the sharpest contrasts are between the daytime and night-time temperatures. In temperate deserts, temperatures vary throughout the year: summers are very hot and winters are very cold.

These contrasts are due to the lack of atmospheric humidity, which causes high daytime temperatures at ground level and rapid cooling at night.

- Precipitation levels** are low and irregular in all deserts. As a result, absolute deserts receive less than 150 mm of rainfall per year and all months are dry. Meanwhile, on the steppes or semiarid edges of deserts, there are least seven dry months, with precipitation levels ranging from 750 to 150 mm. Therefore, water only runs in the **rivers** after precipitation. The rest of the time they remain dry.

## 3.3 Desert vegetation

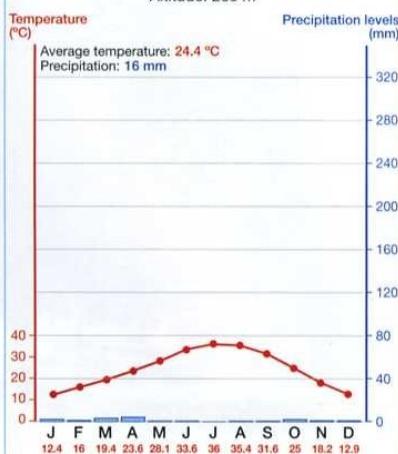
Vegetation is scarce in deserts and has to adapt to aridity. As a result, the roots of plants spread across the surface or reach deep below the ground, in order to capture surface and subterranean water. They develop fleshy stems to store water and have small leaves or spikes, designed to reduce evaporation. They can germinate with very light rain and produce seeds, which will sprout with the next rainfall.

- Desert** vegetation is low-lying and spread out. Cacti and thorny shrubs are the predominate species. It is only in oases, where water and abundant vegetation may be found, for example in the palm groves of torrid deserts.
- On the **steppes**, low-lying grasses and isolated shrubs predominate.

### Climate types

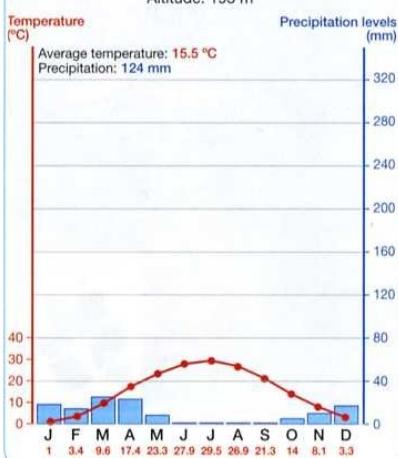
#### Torrid desert climate

Adrar (Algeria)  
Altitude: 263 m



#### Temperate desert climate

Cardzou (Turkmenistan)  
Altitude: 193 m

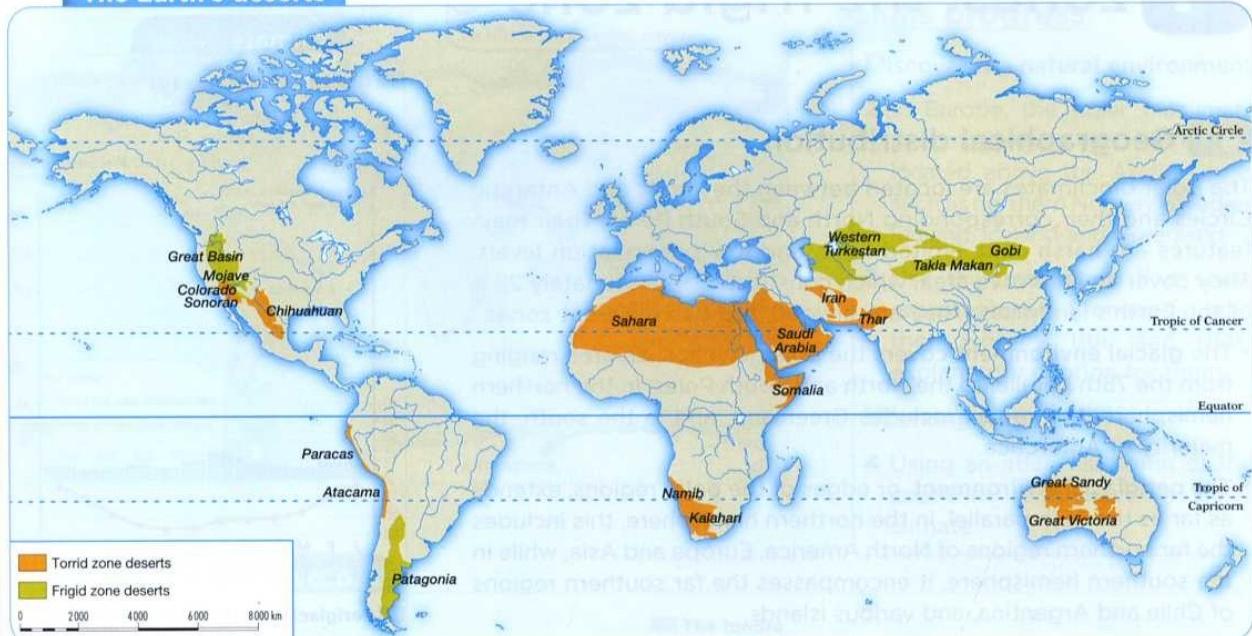


### Skills progress

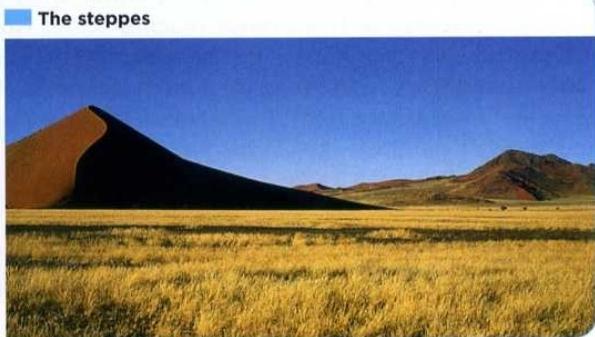
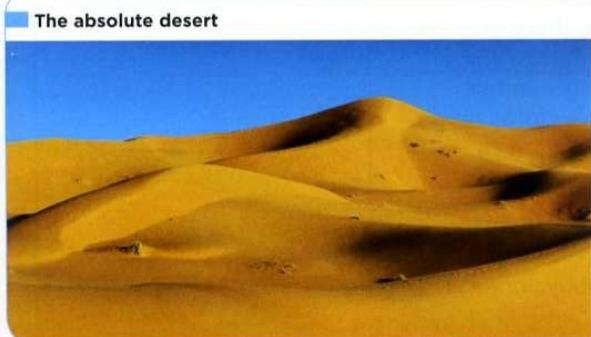
#### Interpreting graphs

- Comment on and compare the climographs above. How are they similar and how do they differ?
- How can the climate of a location tell you if it is in the northern or southern hemisphere?

### The Earth's deserts



### Desert landscapes



### Skills progress

#### Working with maps

- 3 Using an atlas, name three countries in the torrid zone and three countries in the temperate zone where there are deserts.

#### Producing coherent texts

- 4 Summarise the characteristics of desert climates and vegetation in a short paragraph.

#### Analysing physical phenomena

- 5 Answer the following questions: a) What are the differences between torrid and temperate deserts? b) What are the similarities and differences between desert and steppe climates and vegetation?

#### Participating in the learning process



- 6 Find information on any one aspect of the desert bioclimate that interests you. Write a summary in your notebook and give an oral presentation on it in class.

#### Choosing with your own criteria



- 7 What kind of activities would you plan to explain the desert bioclimate? Think about the question before answering.

#### Working with pictures

- 8 Study the pictures of desert landscapes and write a description of them.

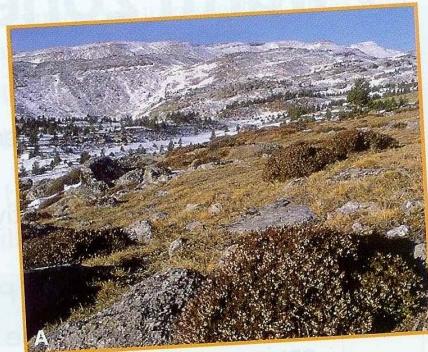
# 1 Natural environments and their transformation

- Listen and read about natural environments.

## 1.1 Natural environments

Natural environments are **large geographical areas** that share common characteristics related to: relief, climate, waters, vegetation, soil and fauna.

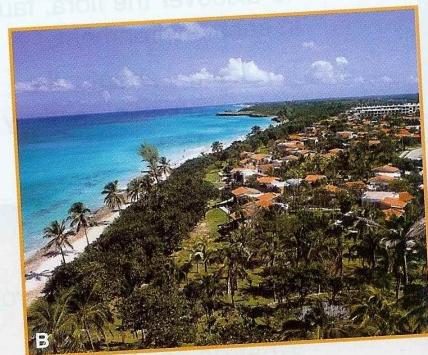
Natural environments generally coincide with climatic regions. They are grouped into **warm, temperate** and **cold** environments.



## 1.2 How the natural environment influences human activity

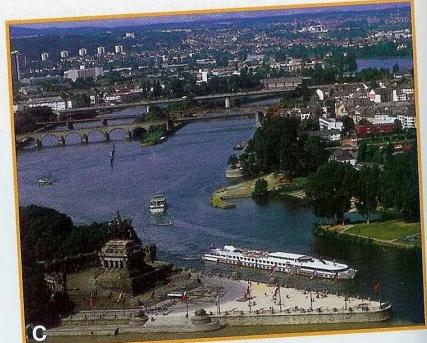
Elements of the natural environment determine how land is used by humans, they also provide them with the **resources** they need.

Relief	It influences population distribution. People prefer flat areas close to the sea and avoid high altitudes.
Climate	People prefer to inhabit areas with a moderate climate and try to avoid those with extreme conditions.
Vegetation	This is an essential resource. It provides food, energy, <b>raw materials</b> for industry, etc.
Waters	The proximity of fresh water is essential for the population. Water provides food and energy.
Soil	This also affects the settlement of population. Areas with fertile soils are preferable to poor soil areas.



## 1.3 Transformation of the physical environment

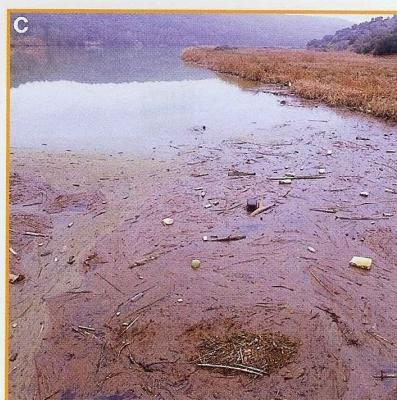
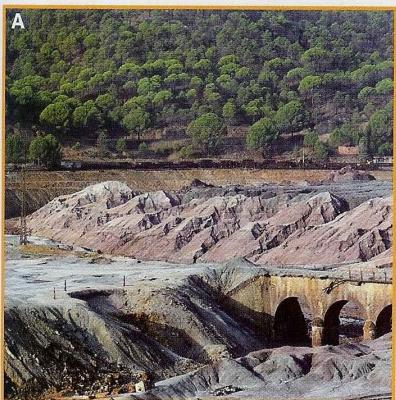
Through their activities people transform the natural environment into a built environment. The **most favourable** environments for human occupation are the tropical and the temperate ones, and the **least favourable** are the equator, deserts, the poles and high mountains.



### Activities

- 1 Make a list of the elements of the natural environment.
- 2 What are the most favourable environments for human occupation?  
What are the least favourable?
- 3 What does human activity transform the natural environment into?
- 4 Look at the photographs: Which shows the least favourable environment for human settlement?  
Explain why the other two are favourable.

## 2 Environmental problems and the conservation movement



Poor use of natural resources causes environmental problems: for example, the destruction and contamination of natural environments and the overexploitation of natural resources.

### 2.1 Environmental problems and protection measures

The elements of natural environments suffer the following problems:

Relief	Alteration by agricultural terraces, mines and <b>quarries</b> , human settlement and infrastructure (roads, tunnels, bridges, etc.)
Atmosphere	Pollution by gas emissions from traffic, industry and other human activities, causing problems like acid rain, depletion of the ozone layer and global warming.
Vegetation	Deforestation due to fires and <b>logging</b> to obtain wood, agricultural land, or space for industry or housing. The consequences are problems like erosion, lower humidity and the extinction of animal and plant species.
Waters	Overexploitation due to excessive fishing. Pollution from agricultural and industrial waste or oil from <b>oil tankers</b> .
Soil	Pollution from agricultural, industrial or urban waste. Erosion, deforestation and agricultural overexploitation leading to desertification.
Fauna and flora	Extinction of species and loss of biodiversity due to human activity.

#### Key vocabulary:

**Resources** (n.)

**Contamination** (n.)

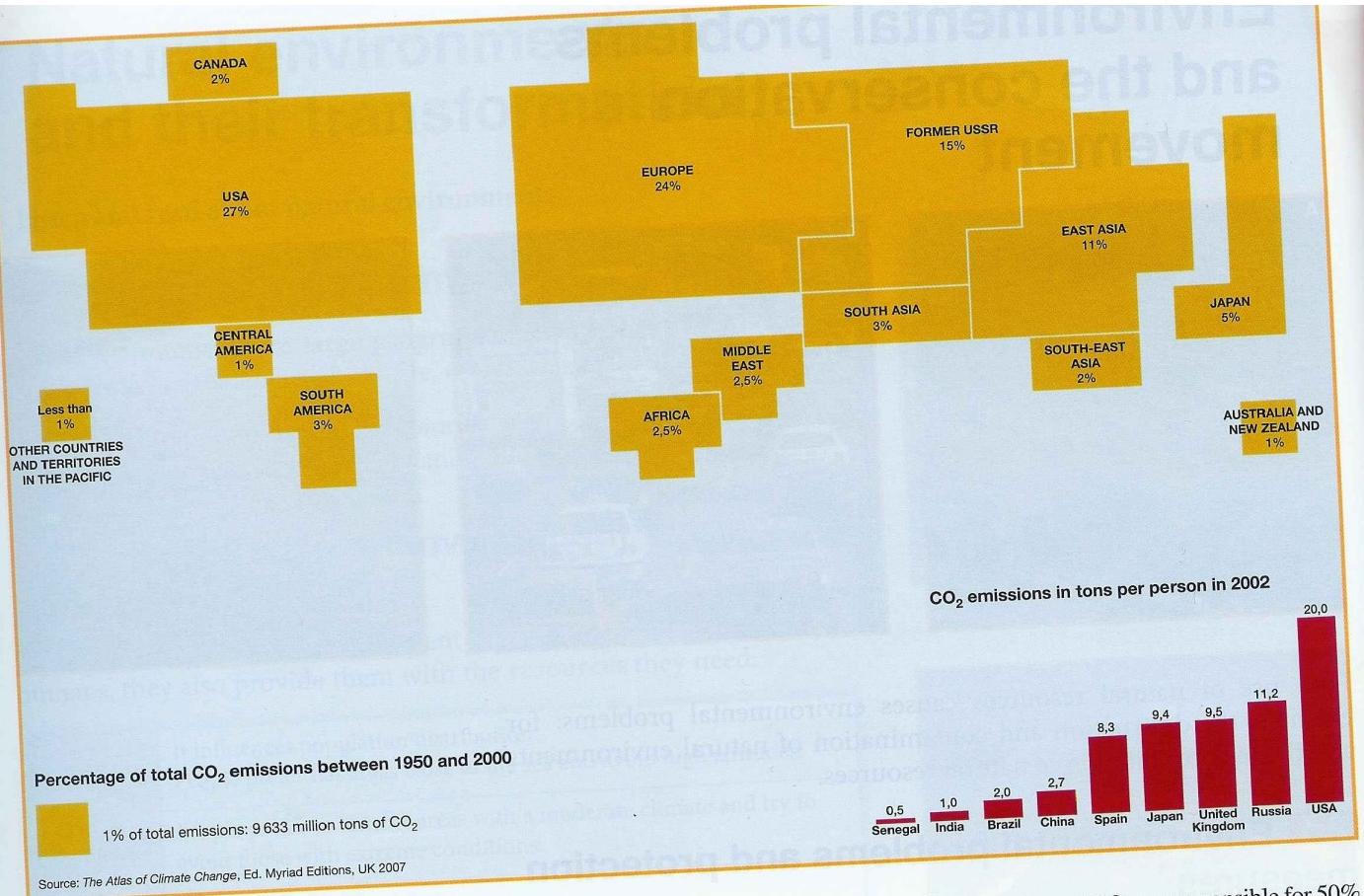
**Overexploitation** (n.)

**Environment** (n.)

**Favourable** (adj.)

**Protected areas** (n.)

**Conservation** (n.)



- The most important **protection measures** are: the establishment of environmental policies, the search for sustainable development and the creation of nature reserves.

► Emissions of CO<sub>2</sub> are responsible for 50% of global warming. They can remain in the atmosphere for more than 200 years.

## The Kyoto Protocol

Governments and international organisations are implementing environmental policies to improve the protection and conservation of the environment. One of the best known has been the Kyoto Protocol. The

Kyoto Protocol came into force in February 2005. Its aim was to reduce globally the emission of greenhouse gases which is the main cause of global warming and climate change.

## Activities

- 1 Put each sentence in its corresponding place in a table like the one shown:

  1. Excessive cattle farming.
  2. Taking the car every time you go somewhere.
  3. A forest fire.
  4. Exploiting an open pit mine
  5. Excessive irrigation agriculture.
  6. Oil spillage caused by an accident.
  7. Extinction of whales.

Destruction	Overexploitation	Contamination
Deforestation Soil erosion Loss of habitat Extinction	Overfishing Overgrazing Extraction Pollution	Industrial waste Chemical spills Plastic litter Microplastics

- Observe the photographs on the previous page. Which environmental problem does each one represent?
  - What is the purpose of environmental policies?

# 4 Environmental problems in Spain

## Contamination

Big cities and industrial areas with **power stations** suffer from pollution. Acoustic pollution has also increased in these areas.

Spain signed the Kyoto Protocol to help solve these problems.

#### ■ Overexploitation and water contamination

Spanish waters suffer from the following problems:

- **Overexploitation** of fresh water for industry, agriculture and urban use causing a shortage of water in rivers, wetlands and aquifers. To avoid these problems new irrigation techniques are being used, water **leakages** repaired, and there are campaigns to save water.
  - **Pollution** of aquifers occurs when chemical products used for agriculture and industry, or from rubbish filter through to the water.

## ■ Forest fires and deforestation

**Deforestation** affects large areas of Spain. Its main causes are the logging industry and forest fires.

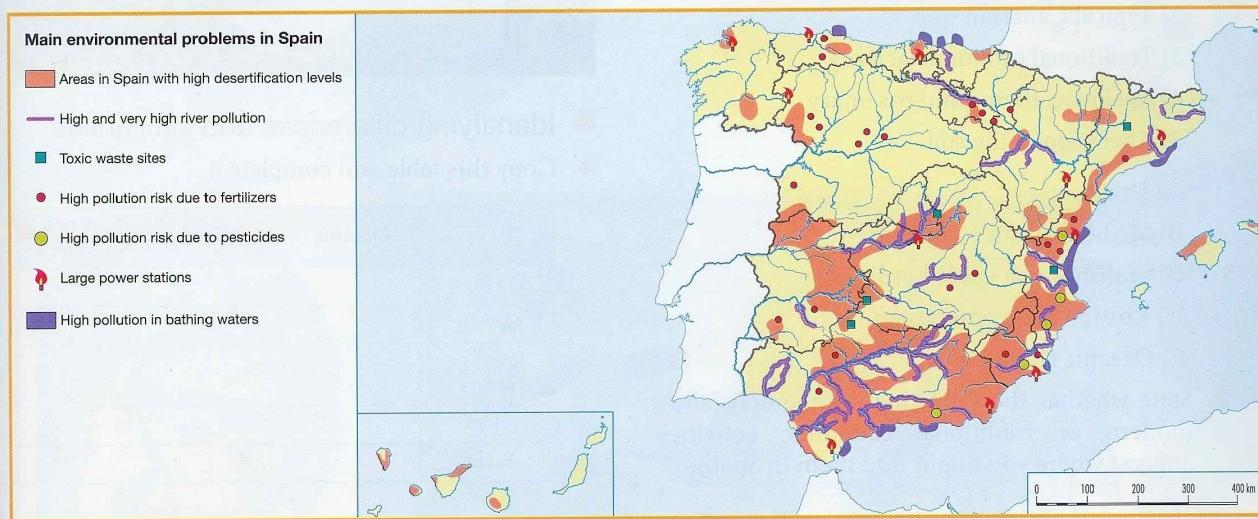
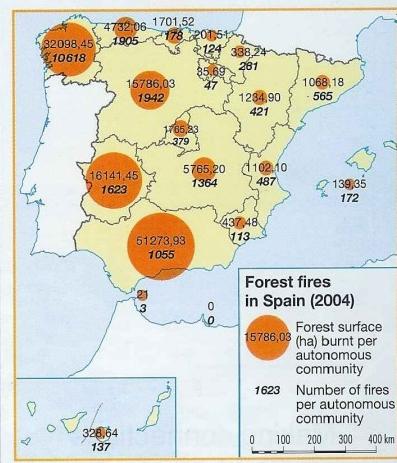
To solve this problem reforestation is promoted and other measures are adopted, such as the clearing of **undergrowth** to prevent fires.

## ■ Alteration of the soil

- Soil is **contaminated** by waste from industry, agriculture and domestic rubbish. In Spain more than 500 kg of solid urban waste is produced, per person, per year.
  - Soil **erosion** is caused by deforestation and by inadequate agricultural practices. Reforestation can help solve this problem.

## Activities

- 1 Analyse the map showing environmental problems in Spain and identify which problems are common to your autonomous community and the neighbouring ones.
  - 2 What problems do Spanish waters face?
  - 3 Look at the map, which community has had the most forest fires? And the least?



## **PAUTAS PARA LA REALIZACIÓN DE TAREAS DE LA SECUENCIA 3**

### **TAREA 1: Cuadro-resumen de medios naturales**

Trabajo a realizar individualmente en inglés.

Consiste en realizar un cuadro con los medios naturales del planeta. Debe contener al menos 8 medios naturales (pueden diferenciarse algunos más) y, como mínimo, las siguientes características: Localización, clima (temperaturas y precipitaciones), vegetación, fauna y actividades humanas.

Los contenidos de las casillas del cuadro-resumen debe ser sintético y claro. Se valorará el uso de colores para diferenciar los medios pertenecientes a diferentes áreas climáticas y la inclusión tanto de medios (diferentes tipos de desiertos, de actividades) como de entradas complementarias (población, ríos, problemas medioambientales, etc).

#### **PAUTAS:**

- 1 – Traza un borrador de cuadro en tu cuaderno.
- 2 - A medida que vayamos viendo los diferentes medios en clase, ve rellenando las casillas con la información más importante de cada día.
- 3 – Busca información complementaria en el libro de texto, el dossier, atlas y páginas de internet.
- 4 – Pasa a limpio el cuadro-resumen asegurándote de que la información que hay en los casilleros es sucinta, clara y correcta.

#### **EVALUACIÓN:**

En general, estos serán los criterios de calificación de la tarea:

1. No entrega el cuadro o este no contiene los contenidos mínimos correctos.
2. El cuadro contiene los contenidos mínimos, con algún error y no totalmente en inglés.
3. El cuadro está completo en inglés, los contenidos son correctos y hay diferenciación de zonas climáticas por colores.
4. El cuadro está completo en inglés, los contenidos son correctos y hay diferenciación de zonas climáticas por colores. Hay medios y entradas complementarias.

### **TAREA 2: Murales-continentes**

Trabajo a realizar en equipo, en inglés, que será expuesto en clase.

La tarea consiste en confeccionar un mural (sobre una cartulina) que represente uno de los continentes y que exponga ordenadamente, por medio de textos redactados e ilustraciones (mapas, fotografías, gráficos, etc) los medios naturales que se dan en el continente. De cada medio debe salir una ficha que explique: Clima (lugares donde se da, factores, temperaturas y precipitaciones), vegetación y fauna y principales actividades humanas (tradicionales y modernas). Se valorará el uso de imágenes, gráficos (climogramas), dibujos, etc que amplíen información así como así como otros datos de interés (leyenda del mapa, problemáticas medioambientales, etc.).

#### **PAUTAS:**

- 1- Una vez constituido el equipo y asignado el continente a exponer, haced un boceto del mural que contenga las ideas básicas sobre el diseño y los elementos geográficos que va a contener.
- 2- Repartíos el trabajo y buscad información sobre lo que os ha tocado (Libros de texto, dossier del curso, atlas, enciclopedias, enlaces de internet, etc.). No dudéis en pasar a l@s compañer@s lo que encontréis que

les pueda ser útil.

- 3- Organizaos también para reunir los recursos necesarios para elaborar el mural: cartulina, recortes de imágenes, colores, etiquetas, pegatinas, tijeras, pegamento, etc
- 4- Reuníos y comentad, siguiendo el guión-boceto, la información y materiales que habéis encontrado.
- 5- Si la información recopilada es suficiente y adecuada montad el mural confeccionando el mapa y los apartados con información.
- 6- Repartíos los puntos del mural para exponer, estudiadlos y haced un pequeño ensayo de la exposición.
- 7- Exponed el trabajo en clase.

#### EVALUACIÓN:

En general, estos serán los criterios de calificación de la tarea:

##### NOTA COLECTIVA

- 1: No se realiza la tarea a tiempo o a ésta le falta algunos de los elementos requeridos. No se expone.
- 2: La información es correcta, salvo algún error, y está bien organizada. La exposición es leída o dicha de memoria "de carrerilla" y no se entiende bien.
- 3: Contiene todos los elementos requeridos. La información es correcta y detallada y está bien organizada. La exposición es clara.
- 4: Todos los elementos requeridos son correctos, detallados y están bien organizados. Hay información complementaria en forma de gráficos, imágenes, etc. La exposición es clara y capta la atención del resto de la clase.

##### NOTA INDIVIDUAL (Los puntos son sumativos)

1. No cumple con su parte del trabajo; Es impuntual o se ausenta; No pone interés ni presta atención a sus compañeras o al profesor; Falta el respeto o molesta.
2. Es puntual y cumple con su parte del trabajo; Presta atención; Coopera con sus compañer@s y ayuda en las tareas.
3. Propone ideas y materiales al grupo y atiende a las propuestas de los demás; Pone facilidades y recursos para hacer los proyectos; Se interesa por cómo marcha el trabajo de sus compañeros.
4. Propone recursos y presta los suyos; Ayuda a los demás y deja que los demás le ayuden.

#### TAREA 3: Viaje por la Península Ibérica

Trabajo individual, en idioma voluntario.

Se trata de realizar un viaje de un extremo a otro de la Península ibérica mencionando y describiendo la distancia recorrida, las principales unidades del relieve recorridas, los ríos atravesados y sus características y los paisajes y medios naturales visitados (al menos 10 elementos). Se valorará uso de mapas, ilustraciones, gráficos y comentarios sobre las actividades humanas y los problemas medioambientales.

#### PAUTAS:

- 1 – Traza, sobre un mapa físico de la península ibérica una linea recta de un extremo a otro.
- 2 – Localiza, al menos, 10 lugares por las que pasa la línea que has trazado.
- 3 – Recopila la información sobre el relieve, las aguas, el clima y las características naturales (también las actividades humanas y los problemas medioambientales) de estos lugares para describirlos. Puedes usar el libro de texto, el dossier de la secuencia, un atlas, enciclopedias, páginas web, etc.
- 4 – Selecciona y ordena la información recopilada de cada elemento elaborando una ficha de etapa por cada elemento.

5 – Redacta tu viaje y compón el documento utilizando los recursos complementarios que consideres.

#### EVALUACIÓN:

En general, estos serán los criterios de calificación de la tarea:

- 1: No realiza la tarea a tiempo o ésta no llega a tener 8 de los elementos requeridos.
- 2: Falta alguno de los elementos mínimos requeridos. El resto de la información es correcta y está bien organizada, presentando, eventualmente, algún error.
- 3: Contiene todos los elementos requeridos. La información es correcta y detallada y está bien organizada.
- 4: Todos los elementos requeridos son correctos, detallados y están bien organizados. Hay información complementaria en forma de gráficos, imágenes, etc.

#### **TAREA 4: Investigación medioambiental**

Trabajo por parejas, en idioma voluntario.

Realizar una entrada en la web de la asignatura que informe de una pequeña investigación sobre un problema medioambiental del entorno. La entrada debe contener una descripción del problema, sus causas, consecuencias y sus posibles soluciones. Se valorará uso de fotografías propias y la referencia a fuentes locales (páginas web, periódicos, etc)..

#### PAUTAS:

- 1- Seleccionad un problema medioambiental que encontréis en vuestro entorno (Puerto Real u otros lugares a los que vayáis a menudo). No es necesario que sea algo catastrófico, podéis observar también pequeñas situaciones o actitudes en vuestra calle o vuestro barrio.
- 2- Buscad en el libro de texto y dossier a qué tipo de problemática está ligado y anotad sus características generales.
- 3- Buscad información sobre el problema a nivel local: noticias en la prensa local, webs de asociaciones que trabajen el tema, entrevistas a gente que sepa de ello, etc.
- 4- Conseguid alguna imagen (podéis hacer las fotografías) que ilustre el problema.
- 5- Redactad en un documento de texto vuestra entrada: Título, problema, descripción, causas, consecuencias y posibles soluciones.
- 6- Haced vuestra entrada en la web de la asignatura, pegando lo que habéis redactado, subiendo la imagen y poniendo, también, los links de las webs que habéis utilizado.
- 7-. ¡¡No olvidéis firmar vuestra entrada!!

#### EVALUACIÓN:

En general, estos serán los criterios de calificación de la tarea:

1. No se realiza la entrada o ésta no contiene los elementos mínimos o estos no son correctos.
2. Realizan la entrada con los contenidos mínimos. Puede haber algún error de contenido u organización.
3. La entrada tiene los contenidos correctos, bien explicados y bien organizados.
4. La entrada tiene los contenidos correctos, bien explicados y bien organizados. Contiene, además, elementos complementarios como imágenes, enlaces, declaraciones en entrevistas, etc.

## **ENLACES DE INTERNET:**

Elementos y factores del clima:

<http://chopo.pntic.mec.es/~ajimen18/GEO4b.htm>

Riesgos climáticos y cambio climático:

[http://www.rinamed.net/es/es\\_ris\\_clim.htm](http://www.rinamed.net/es/es_ris_clim.htm)

<http://www.greenfacts.org/es/cambio-climatico/index.htm>

<http://www.cambioclimaticoglobal.com/>

Medios naturales:

<http://www.librosvivos.net/smtc/homeTC.asp?TemaClave=1007>

Climas cálidos y sus paisajes:

<http://thales.cica.es/rd/Recursos/rd99/ed99-0151-01/capitulos/cap4.html>

Climas templados y sus paisajes:

<http://thales.cica.es/rd/Recursos/rd99/ed99-0151-01/capitulos/cap5.html>

Climas fríos y sus paisajes:

<http://thales.cica.es/rd/Recursos/rd99/ed99-0151-01/capitulos/cap6.html>

Web quest sobre biomas de la Tierra:

<http://sara854.blogspot.com/2008/11/web-quest-sobre-los-biomas-de-la-tierra.html>

Geografía física de España:

<http://www.librosvivos.net/smtc/homeTC.asp?TemaClave=1008>

Paisajes naturales de España, con actividades:

<http://www.librosvivos.net/smtc/PagPorFormulario.asp?TemaClave=1008&est=4>

La política medioambiental española, con actividades:

<http://www.librosvivos.net/smtc/PagPorFormulario.asp?TemaClave=1084&est=4>

Problemas medioambientales (enlaces para T4):

<http://www.ecoportal.net/Servicios/Directorio-de-ONGs/A/Agaden>

<http://www.ecologistasenaccion.es/rubrique24.html>

<http://www.puertorealhoy.es/tag/medio-ambiente/>

## LIBROS:

Arsaniev, Vladimir: **En las montañas de la Sijote-Alin: a través de la taiga de Siberia oriental.** Península, 2007. A través de las aventuras del oficial Vladimir Arsaniev, podemos conocer la vegetación, la fauna, los ríos, las montañas y las etnias aisladas de la taiga de Siberia oriental.

Arnau Muro, Carmen: **Los chorses: un pueblo de la taiga de Siberia.** Ledoria, 2005. En este libro, la autora, una antropóloga que convivió durante largas estancias con el pueblo chorse, de la taiga siberiana, relata su organización social, su cultura y sus creencias.

La Torre, José María: **El sueño de la ciudad perdida,** SM, 2007. Todo sucede en la Amazonia, un medio hostil por su cerrada vegetación, la humedad, los poderosos ríos, las pirañas o los mosquitos. Pero, a la vez, fuente deseada de riqueza para ganaderos y madereros que llevan a cabo la deforestación sistemática de la selva y explotan, expulsan o masacran a las poblaciones indígenas. Estos intereses y la búsqueda de una ciudad legendaria, confluyen en los diversos personajes del libro. La lectura se hace cada vez más absorbente a medida que avanza la novela. Al final hay toques de suspense, tragedia y sobresalto.

Leante, Luis: **La puerta trasera del paraíso,** Alfaguara, 2009. El primer capítulo, Arenas movedizas, plantea el proceso de expansión del desierto del Sahara y el fracaso de la resistencia humana ante el avance de las dunas sobre las tierras fértiles. Construían empalizada, levantaban muros de adobe y paja; hacían, en definitiva, todo lo posible para que la arena cambiara el curso que los vientos le dictaban. El último capítulo también se sitúa en el desierto. El resto de la obra se desarrolla en Barcelona, con el tema de la inmigración como telón de fondo.

Santos, Care: **La ruta del huracán,** Alba, 2000. Aida, de 13 años, acompaña a su padre desde Barcelona a El Salvador. La muchacha queda asombrada ante la exuberante y poderosa geografía del país. Pero el mayor impacto vendrá cuando un huracán proveniente del Atlántico comience a acercarse. Se trata del Mitch, que asoló Centroamérica en 1998. Esta catástrofe la llevará por varios países y vivencias.

Sturniolo, Norma: **Marian y sus amigos del Ártico.** Anaya, 2003. Marian realiza un viaje al Ártico donde conoce su paisaje, y vive aventuras con sus habitantes, los inuit, y con animales como los zorros árticos, el oso polar y los lobos.

Sánchez, Jorge: **Siete viajes a países extraordinarios.** Dilema S.L., 2006. Libro que narra las aventuras de Jorge Sánchez en los siete viajes que realizó para conocer los 192 países del mundo y la Antártida.

Villares, Carlos: **La batalla de los árboles,** SM, 2013. Dos historias se suceden simultáneamente. Una es la de un incendio en un pueblo de Asturias, que provoca grandes pérdidas forestales, pero también en viviendas y animales. Suceso que motiva una investigación para descubrir al pirómano. La otra es la organización de niños y abuelos para evitar que se talen unos árboles centenarios, en una zona de Madrid, con la finalidad de construir un aparcamiento.

## PELÍCULAS:

**Casa de Arena** (Casa de Areia). Andrucha Waddington. Brasil, 2005. \*\*\*\*SC. Un hombre compra un terreno en una región desértica de Brasil, donde pretende construir una próspera hacienda. Se marcha con su joven esposa y una partida de trabajadores. El hombre muere, los trabajadores abandonan el lugar y la mujer queda sola teniendo que hacer frente a unas condiciones climáticas muy adversas caracterizadas por un viento infernal. Durante tres generaciones, las mujeres de la familia harán lo posible por escapar del lugar al que el destino parece atar una y otra vez.

**Interstellar**. Christopher Nolan. Estados Unidos, 2014. \*\*\*\*\* NR-12. En un futuro no demasiado remoto las condiciones de vida en la Tierra se han hecho enormemente difíciles. Un permanente viento destruye las cosechas cubriendolas de arena y tierra. Cooper, un exastronauta de la NASA es reclutado por lo que queda de esta para emprender un fabuloso viaje interestelar, en el que intenta encontrar un planeta con condiciones de vida parecidas a la de la Tierra donde poder llevar a los supervivientes.

**Aventuras en las Islas Cíes**. Luis María Delgado. España, 1967. \*\*\* TP. Un clásico del cine español especialmente recomendado para niños, rodado en un paraje natural tan privilegiado como las islas Cíes en la costa gallega. El argumento gira en torno al sueño de un grupo de adolescentes, alimentado por las historias de un viejo pescador, de encontrar un tesoro escondido en algún lugar de las islas. Los chicos se pondrán a buscar todo lo necesario para embarcarse en tan estimulante aventura.

**Tasio**. Montxo Armendáriz. España, 1984. \*\*\*\* TP. Una de las mejores películas de la historia del cine español acerca de la comunión del hombre con la naturaleza como único reducto de la búsqueda de libertad. La acción recorre varios años de la vida del protagonista, Tasio, desde su niñez a la edad adulta. Tasio ha vivido siempre en el monte, en un paraje de los montes de Urbasa, en Navarra, escenario de sus juegos infantiles y de su forma de vida como carbonero cuando tiene que mantener a su familia. Acosado por las autoridades debido a su actividad como cazador furtivo y viviendo el constante flujo migratorio de los jóvenes hacia la ciudad, Tasio decide permanecer en su entorno en completa soledad antes que dejar atrás sus auténticas raíces.

**Vivir es fácil con los ojos cerrados**. David Trueba. España, 2013. \*\*\* TP. En la España de los 60, Antonio, un entusiasta profesor de inglés en un instituto, utiliza las canciones de The Beatles para enseñar a sus alumnos el idioma, pues es un ferviente admirador del grupo de música de Liverpool. Cuando se entera de que John Lennon va a pasar unos días en el desierto almeriense para rodar las secuencias de una película, no duda en viajar en su automóvil desde Madrid para tratar de entrevistarse con su ídolo y hacerle partícipe de su método de enseñanza. En su viaje recogerá a un chico que se ha escapado de su casa y a una chica que parece huir de su pasado y que se convertirán en los compañeros inseparables de su viaje.

**Una verdad incómoda** (An Inconvenient Truth). Davis Guggenheim. EEUU, 2006.\*\*\*\*TP. Sinopsis: Filme premiado con un Oscar al mejor documental de ese año, en el que el exvicepresidente de EEUU, Al Gore, presenta un aterrador panorama, basado en hechos y demostraciones científicas, de la acción devastadora del ser humano sobre la atmósfera, con la incontrolada emisión de CO2.

**Los últimos días del Edén** (Medicine Man). John McTiernan. EEUU, 1992.\*\*\*TP. Un científico busca un remedio contra el cáncer en plena selva amazónica. Las empresas madereras avanzan en su voraz deforestación y el doctor Campbell y una joven investigadora farmacéutica se enfrentarán a los madereros que amenazan la forma de vida de una tribu autóctona.

## EVALUACIÓN Y AUTOEVALUACIÓN. 1º ESO BILINGÜE. SECUENCIA 3. ALUMNO/A:

**Sobre las sensaciones y el grado de satisfacción con la secuencia realizada:** **Sobre el grado de satisfacción con la tarea realizada en grupo. Puntuar de 1 a 4.**

¿te ha interesado lo que hemos visto?	Grado de satisfacción con el proceso de trabajo	
¿te ha gustado la manera en que hemos abordado el tema?	Grado de satisfacción en el resultado final	
¿estás satisfecho/a con el trabajo que has realizado?	Grado de compromiso y cumplimiento en el proceso de trabajo de mis compañero/as	
¿Crees que has aprendido cosas nuevas? ¿cuáles?		

### **Sobre los demás trabajos**

¿Qué trabajos te han gustado más?	¿Por qué?	Cómo lo puntuarías (1-4)

### **Sobre los contenidos didácticos**

CONOZCO O SE HACER	SI	NO	¿?
Describir las características de un medio natural cualquiera			
Comentar climogramas			
Localizar en el mapa los medios naturales de la Tierra y algunos de sus países			
Localizar en un mapa de España las principales unidades del relieve, los ríos y sus vertientes y la extensión de sus medios naturales			
Organizar la información en un cuadro resumen			
Expresar una opinión razonada sobre problemas medioambientales, la conservación del medio y las iniciativas sociales tendentes a la conservación de los recursos.			

### **¿Tienes algo que añadir?**

Calificaciones (a llenar por el profesor)		
Criterio ponderado	Calificación	Total
Actitud		
Libreta		
Tarea 1		
Tarea 2 (colectiva)		
Tarea 2 (individual)		
Tarea 3		
Tarea 4		